

Ultrasensitive and Selective Chip-Based Detection of DNA

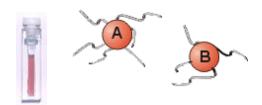


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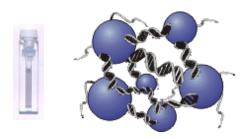
Goals/Objectives

To Develop Ultrasensitive and Ultraselective Biological Detection Systems Based on the Novel Properties of Nanostructures



Orders of Magnitude Improvement in Sensitivity and Selectivity of Biological Detection and Diagnosis Through the Use of Bio-Functionalized Nanoparticles







Center for Nanofabrication and Molecular Self-Assembly

Approach Nanotechnology Modelina On-chip electronic parameter control Microfabrication of Modeling of nanoparticle fluidics, sensor array optical, electronic properties Nanoparticle materials (Multivariate performance optimization) development Modeling of DNA (Microcapillary bioseparation) hybridization selectivity Genetic analysis: BWA. mutation detection Biotechnology 5' GGA T T A TTG TTA---AAT ATT GAT AAG GAT 3' CCT A X T AAC AAT TTA TAA CTA TTC CTA (A) Scanometric (B) Fluorescence AGTC 15 °C 25 °C 35 °C 45 °C 55 °C